SLUDGE REMOVAL-ACTION WORK PLAN
LIVINGSTON RAIL YARD
LIVINGSTON, MONTANA

ENVIROCON, INC.

SLUDGE REMOVAL-ACTION WORK PLAN
LIVINGSTON RAIL YARD
LIVINGSTON, MONTANA

Submitted to:

Montana Department of Health
and Environmental Sciences
Cogswell Building
Helena, Montana 59620

Submitted by:

Burlington Northern Railroad Company
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Prepared by:

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Submittal Date:

May 29, 1992

ENVIROCON, INC.

Date 1st Draft Issued	05/04/92
Date 2nd Draft Issued	05/26/92
Date Approved	05/28/92
Date Final Issued	05/29/92

1.0 INTRODUCTION

This work plan details the sludge removal action necessary to control sources of chlorinated volatile organic compounds (VOCs) to ground water beneath the Livingston Rail Yard (LRY), in Livingston, Montana. This work plan is submitted in response to the Time Critical Response Action Memorandum prepared by the Montana Department of Health and Environmental Sciences (MDHES), dated March 24, 1992. The memorandum represents the selected removal action developed in accordance with CERCLA and CECRA, as amended, and consistent with the NCP. The decision is based on the administrative record for the site. The memorandum requires that Burlington Northern Railroad Co. submit a work plan for MDHES' approval and specifies that the removal action be conducted in accordance with the existing Modified Partial Consent Decree.

This work plan provides a brief history of interim sludge isolation activities and details the operations for removing and disposing of the sludge at the United States Pollution Control Inc. (USPCI) Grassy Mountain Facility, in Utah.

1.1 Sludge Removal Background

The sludge originated from the treatment of waste water at the LRY shops as detailed in the Draft Remedial Investigation Report (Envirocon, 1991).

The four original sludge ponds, including the waste water treatment plant sump, cinder pile lagoon, API separator pond, and overflow pond, were suspected as probable sources of ground water contamination during early site investigations and the ongoing ground water monitoring program. Eliminating the leaching of the sludge to the ground water was a primary objective of the Interim Remedial Measures Work Plan (IRMWP) (Envirocon, 1989), and an Interim Sludge Isolation Work Plan was submitted to the MDHES on November 1, 1989.

The interim isolation work plan outlined sludge isolation activities at the Waste Water Treatment Plant (WWTP) sump, the cinder pile lagoon, and the API separator and overflow ponds. Sludge isolation activities began on November 28, 1989 and were completed on March 29, 1990. The isolation activities involved placing 2,860 cubic yards (yd^3) of sludge on synthetic liners (holding cells) to prevent further leaching of VOCs into the underlying gravels and, ultimately, the ground water. Covers were also placed over the holding cells to eliminate the addition of meteoric water. The configuration of the holding cells is detailed in Section 2.0 of the Draft Remedial Investigation Report.

Sludge was also removed from multiple locations within the drainline system and WWTP. Two hundred and ten yd^3 of sludge were removed from the WWTP grit chambers, the in-line grit chamber, the manways associated with the industrial drainline system, and the surge tank to facilitate WWTP upgrades.

Approximately 4,570 yards of sludge are currently located in three lined holding cells (WWTP sump, cinder pile lagoon, and API separator pond), the

unlined abandoned overflow pond, three 60-cubic-yard above-ground metal tanks, 101 55-gallon drums, eight 2.5-cubic-yard soil bags, a 25,000-gallon horizontal tank, and the rail car.

1.2 Objectives of the Removal Action

The primary objective of the sludge removal action is to reduce the contribution of VOCs to the aquifer. Interim source-control measures to reduce or eliminate the contribution of VOCs to the underlying alluvium and, ultimately, the ground water are presently being implemented at the primary source areas as outlined in the Removal-Action Work Plan for Soils Containing Chlorinated VOCs (Envirocon, 1992). Sludge removal is required to remove potential or continuing sources of VOCs to underlying alluvium and, ultimately, the aquifer.

The sludge removal action is also necessary to conduct additional source-control activities, including soil vapor extraction (SVE) of VOCs on the contaminated alluvium presently underlying the sludge. The Removal-Action Work Plan for Soils Containing Chlorinated VOCs anticipated additional SVE systems following sludge removal. Additional SVE is discussed below in Section 3.0.

The removal action is considered the final remedy for sludge removed and transported to USPCI Grassy Mountain Facility, in Utah. Therefore, a feasibility study and final remedy will not be required for the removed sludge. Materials that meet the definition of sludge (as defined in the Draft Remedial Investigation Report) and contaminated soil associated with the sludge, which are not removed as part of this removal action, will be considered in the site-wide feasibility study.

2.0 SCOPE OF WORK

All sludge identified above, including the buried sludge in the overflow pond, will be removed; stabilized, as appropriate; transported; and disposed of as part of this removal action. Historic ground water elevations in the area of the API and overflow ponds are typically highest during the middle of June. However, ground water elevations are expected to peak in 1992 during mid-May. The high ground water elevations beneath the API and overflow ponds during May and June dictate that sludge removal activities will begin at the WWTP and cinder pile holding cells. Envirocon anticipates that ground water elevations near the API and overflow ponds will decrease enough by mid-July to begin sludge removal. The sludge removal schedule will be dependent upon site conditions.

The following sections detail sludge removal, stabilization, transportation, air monitoring, and health and safety procedures.

2.1 Removal

Sludge contained in drums and soil bags will be transported to the mixing tank for stabilization, as appropriate. The sludge cake generated during sludge desiccation will not need to be stabilized and will be loaded directly into transport units. Sludge in the rail car and 25,000-gallon horizontal tank will be transported to the mixing tank, using a vacuum tank.

Sludge in the three lined holding cells will be removed with a tracked excavator. Following removal of liquids on the covers of the cells, the covers will be opened to facilitate sludge removal. Any free liquids that are deemed suitable for waste water treatment or oil recycling will be removed from the top of the sludge prior to sludge removal. The covers of the sludge holding cells

will be replaced, as appropriate, following each day's activities in order to prevent meteoric water from contributing to the sludge volume and to reduce VOC emissions.

The sludge will be removed by the excavator stationed at the edge of the cell. The teeth of the excavator bucket will be removed to minimize liner damage. An apron constructed of a rigid frame and synthetic liner will be placed between the mixing tank and the lined cells to minimize incidental contamination during sludge removal activities. The work zone in the immediate area of the mixing tank will be monitored, and any spillage will be physically removed and placed in the mixing tank. Following removal of the sludge, the liners will be removed and shipped with the stabilized sludge.

The overflow pond will require removal of approximately 4 feet of overburden to expose the sludge. Overburden placement and SVE design will be outlined in the addendum to the Removal-Action Work Plan for Soils Containing Chlorinated VOCs, as discussed in Section 3.0 of this work plan. Grossly contaminated alluvium beneath the sludge in the overflow pond will be removed and contained, as determined by MDHES and Envirocon on-site coordinators, prior to replacement of the overburden.

The depth of sludge removal in the abandoned overflow pond will be determined in the field. Test excavations conducted in the abandoned overflow pond area indicate that the sludge/alluvium interface is obvious and easily defined. The sludge/alluvium interface occurs where sludge grades to contaminated alluvium over a distance of approximately 6 inches.

2.2 Stabilization

Stabilization of a portion of the sludge is required to meet the definition of a solid waste as determined by the paint filter liquids test. The paint filter test (Method 9095, EPA Publication No. SW-846) is attached as Appendix A.

Envirocon and USPCI have conducted bench-scale stabilization tests and the results are included as Appendix B. Kiln-dust will be used to stabilize the sludge to meet the solid waste requirements, because of its greater calcium-oxide content and availability. Based upon the stabilization tests, 10 percent kiln dust by-weight, or approximately 450 tons (1 yard = ~ 1 ton), will be used. The analysis of the kiln dust is included as Appendix C.

The sludge will be stabilized in above-ground metal tanks staged immediately adjacent to the lined holding cells. The tanks will include one of the 60-yd^3 sludge holding tanks, which has been modified to facilitate mixing, and a 50-ton International Payloader box modified for mixing. The mixing tanks are mounted on skids and will be moved by the excavator, as necessary. Stabilization will be conducted with excavators staged near the mixing tank. Spillage of sludge around the mixing tank will be minimized by using aprons and protective liners around the mixing tanks.

The kiln dust will be handled in bulk form and staged next to the mixing tank. Kiln dust will be shipped by end-dump transport units or roll-offs. The kiln dust will be handled in such a manner to maintain total dust levels at below 15 ug/m^3 at work-zone boundaries, as discussed below in Section 2.4. Kiln dust will be added to the mixing tank either with a second piece of equipment (bobcat) or applied with the excavators.

2.3 Transport/Disposal

The sludge will be transported to USPCI's Grassy Mountain Facility via end-dump transport units. Transportation will be conducted in accordance with applicable Department of Transportation regulations.

The transport units will be lined with visqueen to facilitate unloading. A layer of kiln dust will be placed, as appropriate, in the transport units prior to loading the sludge. The transport units will be loaded by the excavator while staged immediately adjacent to the mixing tank. Following the loading of sludge, additional kiln dust will be placed on the sludge, as appropriate, to absorb any liquids which may vibrate from the stabilized sludge. In addition, USPCI has the capabilities to spot-stabilize or, if necessary, restabilize the complete load at the Grassy Mountain Facility. The loads will be tarped immediately following loading procedures and prior to off-site travel.

The work zones will be established with a designated ingress and egress. Before leaving the work zone, the trucks will be decontaminated as discussed in Section 2.4. Following egress, the transport units will be weighed at the county incinerator scale.

The stabilized sludge has been approved for delivery from April 3, 1992 through April 3, 1993 at the Grassy Mountain Facility. The notification of waste acceptance is attached as Appendix D. The stabilized sludge will be placed within the facility's industrial cell. The facility itself is permitted to accept hazardous waste. The industrial cell consists of natural clays, two synthetic liners, leachate collection, and run-on and run-off control. The audit information from the Grassy Mountain Facility is included as Appendix E.

2.4 Decontamination

The sludge stabilization and transport activities are designed to minimize decontamination and, therefore, the generation of waste water. During sludge removal and stabilization activities, the aprons, interior of the mixing tank, and bucket and stick of the excavation will come in contact with sludge. The tracks or wheels of the excavator, exterior of the mixing tank, and aprons will be physically decontaminated, if necessary, prior to mobilization to the next sludge holding cell.

During sludge loading activities, the apron between the mixing tank and the truck will minimize or eliminate the truck's contact with sludge. The trucks will be inspected and physically decontaminated before leaving the work zone.

Following sludge stabilization and transport activities, the equipment will be decontaminated, which includes pressure-washing. The mixing tanks will be pressure-washed and the waste water will be removed from the tanks with the vacuum trailer. The excavator bucket and stick will be pressure-washed over the mixing tank. If heavy equipment needs to be decontaminated, the portable decontamination facility will be used and the waste water will be collected. The collected waste water will be treated and discharged according to MPDES Permit MT-01029670.

2.5 Air Monitoring

Air sampling will be conducted to monitor employee exposure and work-zone air quality and will be conducted using both real-time (photoionizaton detector) and National Institute of Occupational Safety and Health (NIOSH) sampling and laboratory analytical techniques. Air monitoring will be

conducted in accordance with Sections 9.7.2 and 9.7.3 of the IRMWP, as amended. Air sampling and analysis for volatile organics will be conducted using NIOSH Method 1003. Air sampling for particulates will be conducted using NIOSH Method 0500.

Real-time air monitoring results will be evaluated by Envirocon and MDHES on-site coordinators, and work activities will be modified, as appropriate. NIOSH sampling results will be provided to the MDHES on the day of receipt.

2.6 Health and Safety

Health and safety procedures will be followed in accordance with Section 11.0 of the IRMWP, as amended. The minimum level of personal protective equipment (PPE) will be established on an operation-specific basis, based upon the air monitoring described above. Work zones will be established, as appropriate, by Envirocon and MDHES on-site coordinators, in accordance with Section 11.0 of the IRMWP, as amended.

Worker ingress/egress will be established at the west end of each work zone (generally upwind). PPE will be removed in the contaminant reduction zone (CRZ), established immediately adjacent the ingress/egress. The mobile decontamination van will be staged in the CRZ for emergency decontamination procedures. Prior to sludge removal activities, Envirocon and MDHES will brief the local fire department, police department, and disaster and emergency services personnel.

3.0 SOIL VAPOR EXTRACTION

As discussed above, one of the primary objectives of the sludge removal action is to facilitate SVE on the soil underlying the sludge. The Removal-Action Work Plan for Soils Containing Chlorinated VOCs anticipated the installation of SVE systems at the API and overflow ponds following sludge removal.

Envirocon will submit an addendum to the Removal-Action Work Plan for Soils Containing Chlorinated VOCs, which will include an SVE design for the API and overflow ponds. Envirocon anticipates installing the SVE system at the overflow pond during sludge removal operations.

4.0 SCHEDULE

Envirocon, representing Burlington Northern Railroad Co., is prepared to begin on-site activities on June 1, 1992. The sludge removal action is scheduled to take approximately six to eight weeks, depending on acceptable weather conditions and based upon the present understanding of sludge removal. Sludge removal at the API separator and overflow ponds will be conducted as ground water levels permit. It is anticipated that ground water elevations will have decreased enough by early July to proceed with sludge removal in these two ponds.

5.0 REPORTING

MDHES will have access to all available air monitoring results and weight tickets from transport units. Air monitoring results will be submitted to the MDHES by letter the day following receipt from the laboratory. A report will be submitted to MDHES within 30 days following completion of the activities outlined in this work plan.

APPENDIX A

METHOD 9095

PAINT FILTER LIQUIDS TEST

1.0 SCOPE AND APPLICATION

1.1 This method is used to determine the presence of free liquids in a representative sample of waste.

1.2 The method is used to determine compliance with 40 CFR 264.314 and 265.314.

2.0 SUMMARY OF METHOD

2.1 A predetermined amount of material is placed in a paint filter. If any portion of the material passes through and drops from the filter within the 5-min test period, the material is deemed to contain free liquids.

3.0 INTERFERENCES

3.1 Filter media were observed to separate from the filter cone on exposure to alkaline materials. This development causes no problem if the sample is not disturbed.

4.0 APPARATUS AND MATERIALS

4.1 Conical paint filter: Mesh number 60 (fine meshed size). Available at local paint stores such as Sherwin-Williams and Glidden for an approximate cost of $0.07 each.

4.2 Glass funnel: If the paint filter, with the waste, cannot sustain its weight on the ring stand, then a fluted glass funnel or glass funnel with a mouth large enough to allow at least 1 in. of the filter mesh to protrude should be used to support the filter. The funnel is to be fluted or have a large open mouth in order to support the paint filter yet not interfere with the movement, to the graduated cylinder, of the liquid that passes through the filter mesh.

4.3 Ring stand and ring, or tripod.

4.4 Graduated cylinder or beaker: 100-mL.

5.0 REAGENTS

5.1 None.

6.0 SAMPLE COLLECTION, PRESERVATION, AND HANDLING

6.1 All samples must be collected according to the directions in Chapter Nine of this manual.

6.2 A 100-mL or 100-g representative sample is required for the test. If it is not possible to obtain a sample of 100 mL or 100 g that is sufficiently representative of the waste, the analyst may use larger size samples in multiples of 100 mL or 100 g, i.e., 200, 300, 400 mL or g. However, when larger samples are used, analysts shall divide the sample into 100-mL or 100-g portions and test each portion separately. If any portion contains free liquids, the entire sample is considered to have free liquids.

7.0 PROCEDURE

7.1 Assemble test apparatus as shown in Figure 1.

7.2 Place sample in the filter. A funnel may be used to provide support for the paint filter.

7.3 Allow sample to drain for 5 min into the graduated cylinder.

7.4 If any portion of the test material collects in the graduated cylinder in the 5-min period, then the material is deemed to contain free liquids for purposes of 40 CFR 264.314 and 265.314.

8.0 QUALITY CONTROL

8.1 Duplicate samples should be analyzed on a routine basis.

9.0 METHOD PERFORMANCE

9.1 No data provided.

10.0 REFERENCES

10.1 None required.

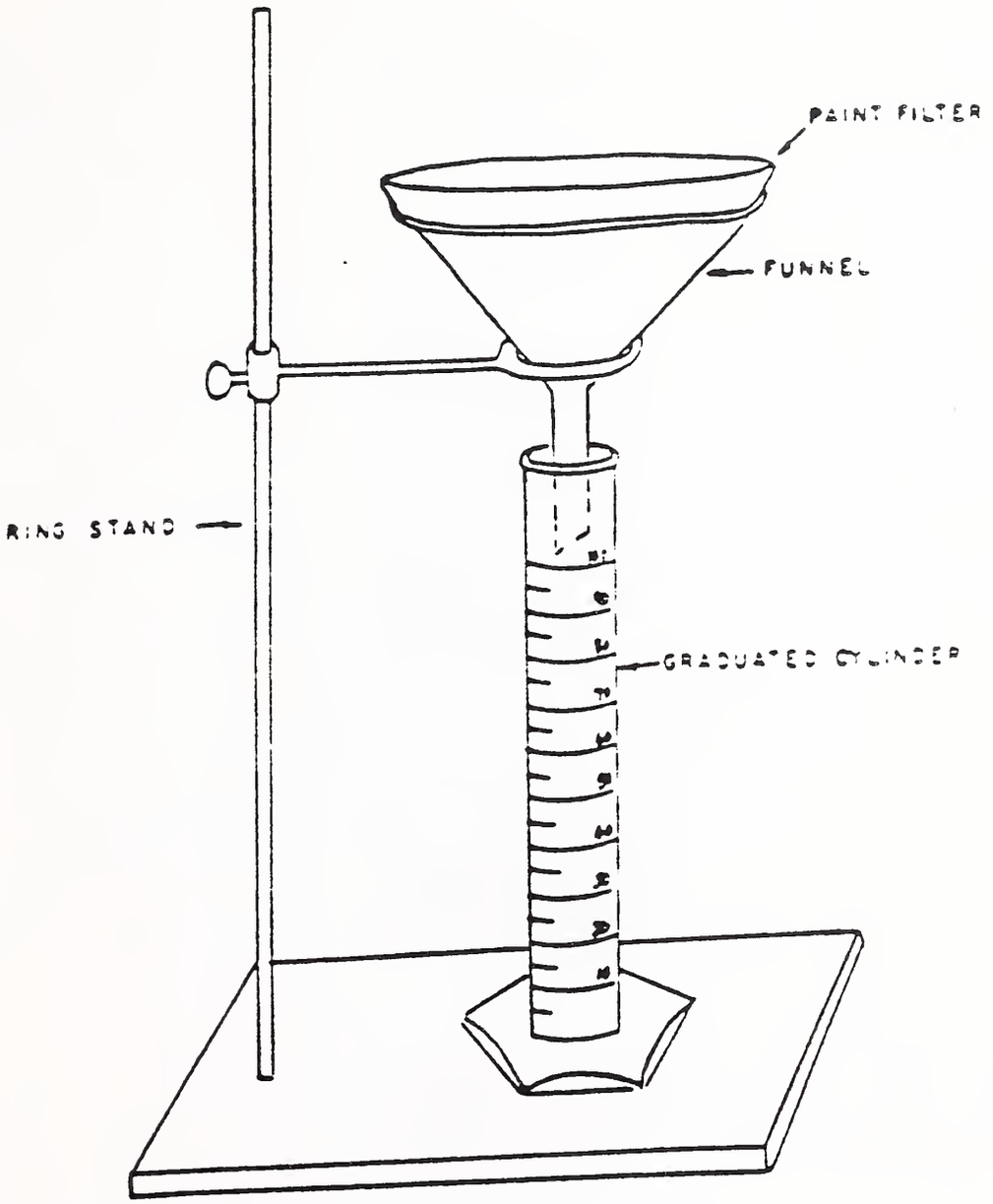
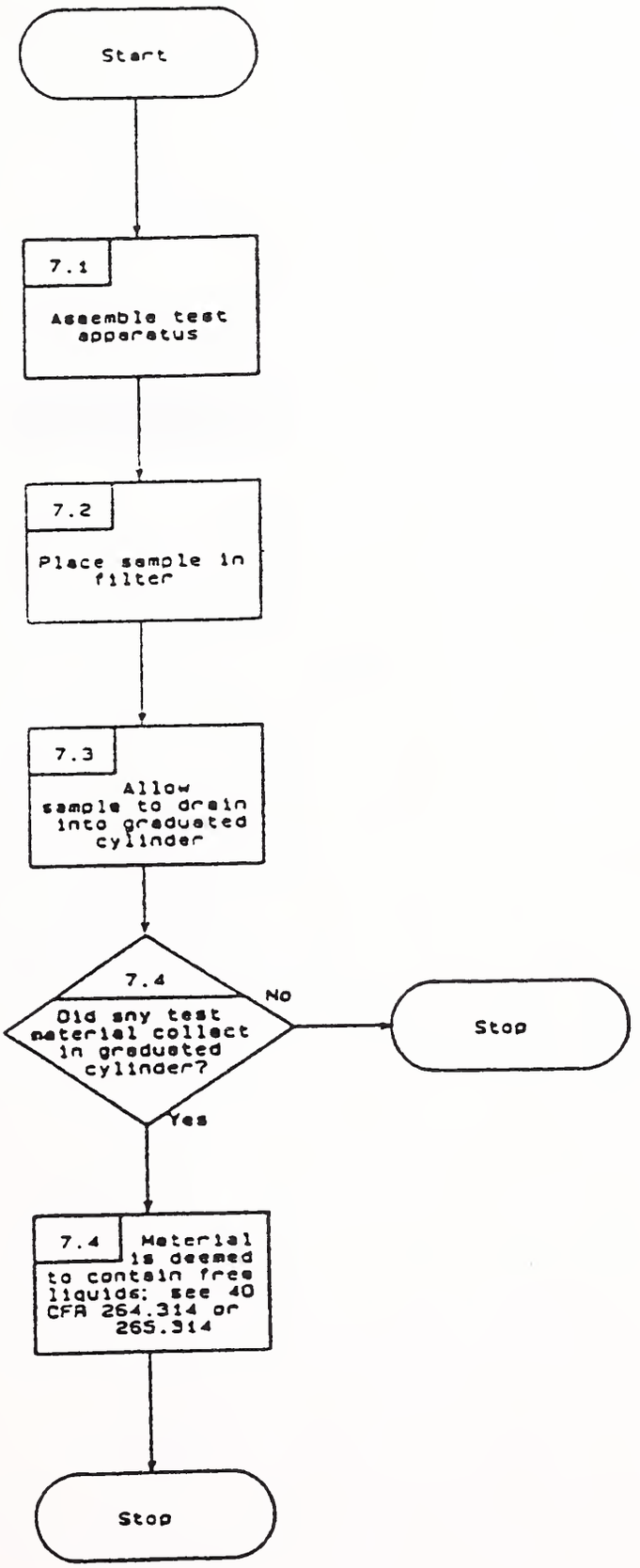


Figure 1. Paint filter test apparatus.

METHOD 9095

PAINT FILTER LIQUIDS TEST



APPENDIX B

USPCI
A Subsidiary of
Union Pacific Corporation

FINAL REPORT
FOR
ENVIROCON

LIVINGSTON SLUDGES
TREATABILITY STUDY

PREPARED BY:
USPCI INC.
BOULDER, COLORADO
March 6, 1992

FINAL REPORT
FOR
ENVIROCON

LIVINGSTON SLUDGES
TREATABILITY STUDY

1.0 Introduction:

USPCI was contracted by ENVIROCON to perform a treatability study on two sets of non-hazardous sludges from Livingston Montana for Burlington Northern Railroad. On February 11, 1992 USPCI received two quarts each of two types of sludge, along with fly ash and kiln dust from ENVIROCON. The following procedures were then to take place:

1. Untreated samples were to be analyzed for moisture content and specific gravity.

2. Treatment recipes were to be developed for both type of samples using both reagents at different concentrations.

3. The treated samples were then to be tested for swell increase due to the addition of reagents.

4. The treated samples were also to be analyzed for specific gravity, free liquids and unconfined compressive strength.

5. The final recipe fixation ratios by weight would then be reported.

2.0 Sample Receipt:

On February 11, 1992, four 1-quart containers of sludge were received by USPCI for treatability studies. USPCI logged in the samples in accordance with EPA regulations for Treatability Study Small Quantity Generators.

3.0 Formula Development:

Three different ratios of both the fly ash and the kiln dust were evaluated for both sludge materials for a total of 12 different recipe designs.

3.1 Mix Procedure:

The 12 samples were mixed in the following procedures:

1. A 100 gram sample of homogenized sludge was weighed.

2. The required ratio of reagent was measured by weight and added to the sludge. The material was blended thoroughly.

3. The samples were allowed to cure for 72 hours.

3.2 Physical Testing:

The soil samples were tested for compressive strength after three days cure time using a Soil Test Pocket Penetrometer. After 7 days the samples were analyzed for bulk density and percent swell and compared to the untreated soil.

4.3 Results and Interpretation:

As stated in the preliminary treatability results memo, and corresponding phone call, it is our understanding that no specific strength is needed in order to landfill the sludge. Although both sludges passed the paint filter test, (for free liquids) USPCI still feels it is necessary to use either fly ash or cement kiln dust to stabilize the free liquids that are contained in the sludge. Experience has shown that during transport, free liquids work themselves to the surface of the container, and once they arrive at the disposal site, they are then rejected. Therefore it is recommended that a 5 percent fly ash or cement kiln dust, (which ever is more economical), be added to both waste sludges before being shipped to the landfill. As an added measure, the top of each load shcuid be sprinkled with the fly ash or kiln dust to capture any moisture that may seep due to agitation by transportation.

5.0 Conclusion:

USPCI understands that ENVIROCON wishes to profile the waste sludges into Grassy Mountain. USPCI needs to know what type of reagent and what concentration ENVIROCON wishes to stabilize the sludges with. USPCI will arrange to have the solidified samples returned to ENVIROCON in order to send sample and profile together to the disposal facility. Please call Bruce Bennett at (303)938-5526 with the information requested, at your convenience.

Appendix I
Treatability Study for ENVIROCON
Data Tables

Table 1. Untreated sludges:

Density of sludge # 326 : 1000 grams per 1/30 cubic foot
67 pounds per cubic foot
1810 pounds per cubic yard

1809 / T yd³

In cup density, non-compacted: 1.06 grams per cubic centimeter.

Density of sludge # 327 : 1151 grams per 1/30 cubic foot
77 pounds per cubic foot
2079 pounds per cubic yard

2079 / yd³

In cup density, non-compacted: 1.22 grams per cubic centimeter.

Table 2. Treated sludges:

Sample 326

Reagent type and weight addition		pH	Swell Increase	Specific Gravity	UCS in psi
1 Fly Ash	15%	7.0	2 %	1.20	0
2 ." "	25%	8.5	9 %	1.23	10
3. " "	40%	8.5	22 %	1.23	0
4. Cement Kiln Dust	15%	8.0	2 %	1.20	0
5. " "	25%	8.0	11 %	1.20	0
6 " "	40%	10.0	40 %	1.06	0

Sample 327

Reagent type and weight addition		pH	Swell Increase	Specific Gravity	UCS in psi
1 Fly Ash	5%	9.0	0 %	1.28	42
2 ." "	10%	9.0	5 %	1.22	35
3. " "	15%	11.0	5 %	1.22	24
4. Cement Kiln Dust	5%	8.5	0 %	1.28	28
5. " "	10%	8.5	5 %	1.22	28
6 " "	15%	10.0	5 %	1.22	35

All samples passed the paint filter test before stabilization
UCS - Unconfined Compressive Strength

APPENDIX C

TRIDENT DUST ANALYSIS

RL NO. 86-	586 Dust From Silo
$\%SiO_2$	15.0
Al_2O_3	3.1
Fe_2O_3	2.4
CaO	50.0
MgO	1.0
SO_3 (Total)	5.3
Na_2O	0.19
K_2O	2.5
Loss	19.4
TiO_2	0.17
ZnO	0.01
Mn_2O_3	0.05
SrO	0.05
P_2O_5	0.05
Total	99.22
Freelime	11.50

EPA EP TOXICITY PROCEDURE

	586 Dust ppm	EPA Maximum Concentration ppm
As	.007	5.0
Ba	.97	100.0
Cd	<.01	1.0
Cr	.09	5.0
Pb	.71	5.0
Hg	.014	0.2
Sr	.006	1.0
Ag	<.01	5.0

FINENESS

100 - 92 %

200 - 72 %

325 - 61 %

Grant E. Hall

GEH/lck
Production & Quality Services
November 11, 1986

c0 IDEAL Ideal Basic Industries
Cement Division

DUST ANALYSIS IN OXIDE PERCENT

PRODUCED: 02-26-90

CHEMICAL COMPOSITION:

	PERCENT
SILICON DIOXIDE (SIO2)	18.9
ALUMINUM DIOXIDE (AL2O3)	4.3
FERRIC OXIDE (FE2O3)	2.9
CALCIUM OXIDE (CAO)	62.8
MAGNESIUM OXIDE (MGO)	1.7
SULFUR TRIOXIDE (SO3)	3.9
POTASSIUM OXIDE (K2O)	3.03
LOSS ON IGNITION	21.16

ALKALIES (NA2O EQUIVALENT)	2.17

Ideal Basic Industries
Cement Division

c0

DUST ANALYSIS IN OXIDE PERCENT

PRODUCED: 02-25-90

CHEMICAL COMPOSITION:

	PERCENT
SILICON DIOXIDE (SIO2)	19.0
ALUMINUM DIOXIDE (AL2O3)	4.3
FERRIC OXIDE (FE2O3)	3.1
CALCIUM OXIDE (CAO)	54.3
MAGNESIUM OXIDE (MGO)	1.7
SULFUR TRIOXIDE (SO3)	4.9
POTASSIUM OXIDE (K2O)	3.51
LOSS ON IGNITION	20.65

ALKALIES (NA2O EQUIVALENT)	2.48

Ideal Basic Industries
Cement Division

DUST ANALYSIS IN OXIDE PERCENT

PRODUCED: 02-24-90

CHEMICAL COMPOSITION:

	PERCENT
SILICON DIOXIDE (SIO2)	18.7
ALUMINUM DIOXIDE (AL2O3)	3.4
FERRIC OXIDE (FE2O3)	3.1
CALCIUM OXIDE (CAO)	56.0
MAGNESIUM OXIDE (MGO)	1.6
SULFUR TRIOXIDE (SO3)	3.3
POTASSIUM OXIDE (K2O)	2.44
LOSS ON IGNITION	21.37

ALKALIES (NA2O EQUIVALENT)	1.78

Ideal Basic Industries
Cement Division

DUST ANALYSIS IN OXIDE PERCENT

PRODUCED: 02-23-90

CHEMICAL COMPOSITION,

	PERCENT
SILICON DIOXIDE (SIO2)	18.7
ALUMINUM DIOXIDE (AL2O3)	3.3
FERRIC OXIDE (FE2O3)	3.0
CALCIUM OXIDE (CAO)	56.0
MAGNESIUM OXIDE (MGO)	1.7
SULFUR TRIOXIDE (SO3)	3.8
POTASSIUM OXIDE (K2O)	2.28
LOSS ON IGNITION	21.21

ALKALIES (NA2O EQUIVALENT)	1.67

Ideal Basic Industries
Cement Division

DUST ANALYSIS IN OXIDE PERCENT

PRODUCED: 02-22-90

CHEMICAL COMPOSITION:

	PERCENT
SILICON DIOXIDE (SIO2)	19.4
ALUMINUM DIOXIDE (AL2O3)	4.5
FERRIC OXIDE (FE2O3)	3.1
CALCIUM OXIDE (CAO)	61.9
MAGNESIUM OXIDE (MGO)	1.9
SULFUR TRIOXIDE (SO3)	5.2
POTASSIUM OXIDE (K2O)	3.48
LOSS ON IGNITION	21.87

ALKALIES (NA2O EQUIVALENT)	2.45

APPENDIX D

USPCI
A Subsidiary of
Union Pacific Corporation

NOTIFICATION OF WASTE ACCEPTANCE
Grassy Mountain FINS

04/03/92

CUSTOMER INFORMATION
EPA ID#: MTT310010087
BURLINGTON NORTHERN RAILROAD
EAST GALLATIN STREET
LIVINGSTON MT 59047
CONTACT: MELVIN BYRDA
PHONE: (913) 661-4439

INVOICE INFORMATION
REF #: 32022
ENVIROCON INC
101 INTERNATIONAL WAY
MISSOULA MT 59807
CONTACT: KRIS KOK
PHONE: (406) 222-2832

PROFILE SHEET #: 78402 SAMPLE #: NS
RECEIVED: 04/02/92
Last Change Date..: 04/03/92

ACCEPTANCE #: **GM92-0641**
WASTEWATER TREATMENT SLUDGE

Thank you for selecting USPCI for your waste management requirements. Your waste stream has been reviewed and is acceptable for management at our facility based on the information provided on the profile sheet number listed above and conditions listed below. Our facility has the necessary permits to allow the storage, the treatment, or the disposal of this waste. The above referenced acceptance number should be listed on all shipping documents and correspondence. Please retain these documents for your records and future reference.

Please contact Customer Service at (801) 595-3900 should you have any questions. To schedule a shipment contact USPCI customer service at 1-800-877-2416.

USPCI Sales Representative: GREGG NICKEL PHONE: (307) 235-8518

ACCEPTANCE INFORMATION

The waste stream identified by the reference number above is acceptable for disposal

This waste is acceptable for delivery beginning on 04/03/92 thru 04/03/93, at which time an update review may be required for continued acceptability.

Comments: INDUSTRIAL CELL/ NON HAZARDOUS CERTIFICATE ON FILE
PENDING ANALYTICAL REVIEW

Shipping requirements: NON-HAZARDOUS certificate required per 40 CFR 261.4 and/or Part 261 where said waste is not classified as a hazardous waste in Subpart C.

Type of Container: SOLID (BULK)

Grassy Mountain Facility • P.O. Box 22750 • Salt Lake City, Utah 84122 • 801/595-3900 • Fax 801/595-3990

04/03/92

PROFILE SHEET #: 78402 SAMPLE #: NS ACCEPTANCE #: GM92-0641

WASTE STREAM ANALYSIS INFORMATION

Waste Name.....: WASTEWATER TREATMENT SLUDGE
Physical State.....:
Process Producing Waste..: WASTEWATER TREATMENT OPERATIONS
EPA Waste Codes.....: NONE

NS - NO SAMPLE

AUTHORIZATIONS

Approval: _____ Date: 04/03/92

Approval: _____ Date: 04/03/92

APPENDIX E

USPCI

Grassy/Grayback Mountain Facility

AUDIT INFORMATION

March, 1991

USPCI
A Subsidiary of
Union Pacific Corporation

AUDIT INFORMATION

U.S. POLLUTION CONTROL, INC.
GRASSY/GRAYBACK MOUNTAIN FACILITY

I. FACILITY IDENTIFICATION

Facility Name:	Grassy Mountain (RCRA) and Grayback Mountain (TSCA)
Site Location:	3 miles east, 7 miles north, off I-80, Exit 41 (Knolls)
Mailing Address:	P. O. Box 22750 Salt Lake City, UT 84122-9998
Phone:	(801) 595-3900
EPA I.D. No.:	UTD991 301 748

A. GRASSY AND GRAYBACK MOUNTAIN FACILITY MANAGEMENT

General Manager:	W. Ken Hall
Operations Manager:	Edward Labus
Technical Manager:	Mark Griffin
Training Manager:	Matthew Trujillo
Environmental Manager:	Dennis Romankowski
Laboratory Manager:	Roger Olbrot
Engineering Manager:	Gregg Tripp

II. COMPANY ORGANIZATION

U.S. Pollution Control, Inc. (USPCI), an Oklahoma corporation, is a wholly-owned subsidiary of USPCI, Inc., with both based in Houston, Texas, and with field offices throughout the United States. USPCI, Inc. is wholly-owned by Union Pacific Corporation.

A. Corporate Sales Office

Address:	One Commerce Green 515 W. Greens Road Suite 500 Houston, TX 77067
Phone:	(713) 775-7800
Customer Service:	(800) 877-2416

B. U.S. Pollution Control, Inc. Officers

President:	William H. Shea, Jr.

Vice Presidents:	Daniel W. Belger, Jr., Vice President - Sales John R. Brooks, Senior Vice President - Remedial Services James R. Campbell, Vice President - Finance James V. Faulkner, Jr., Senior Vice President/ General Counsel Karl Shuler, Vice President of Operations - Remedial Services Dana C. Lockwood, Vice President of Health, Safety & Compliance

C. Subsidiaries and Divisions of U.S. Pollution Control, Inc.

Hydrocarbon Recovery Services
Hydrocarbon Recyclers, Inc.
5324 West 46th Street South
Tulsa, OK 74107

Hydrocarbon Recyclers, Inc. of Wichita
2549 North New York Street
Wichita, KS 67219

Hydrocarbon Recyclers, Inc. of San Antonio
4303 Profit Drive
San Antonio, TX 78219

Analytical Services Division
National Analytical Laboratories
4322 South 49th West Avenue
Tulsa, OK 74107

Remedial Services Division
5665 Flatiron Parkway
Boulder, CO 80301

Transportation Division
10220 West Reno
Oklahoma City, OK 73127

III. PERMITS-AUTHORIZATIONS

A. Chronology

In 1982, the Grassy Mountain facility opened and began limited operations. The facility received its Part A permit on August 3, 1983. A time frame was then established for submittal and review of individual sections. The State of Utah declared the Part B application complete and developed a draft permit for public review and comment, which was released on November 19, 1987. The Grassy Mountain facility received its Part B permit on June 30, 1988 for RCRA operations.

Under the Toxic Substances Control Act (TSCA), the U.S. Environmental Protection Agency (EPA) also approved, in December 1985, landfill disposal of PCB solid wastes and a treatment system for PCB oils at the site.

B. Authority-Agency Contacts

The U.S. EPA, the Utah State Department of Health Bureau of Solid and Hazardous Waste, and Tooele County are the authorities governing the generation, treatment, and disposal of hazardous wastes within the State of Utah. EPA Region VIII (Denver, Colorado) is the governing authority with regard to wastes regulated by TSCA.

AGENCY CONTACTS

Utah State Department of Health
Bureau of Solid and Hazardous Waste
288 North 1460 West
Salt Lake City, UT 84116
(801) 538-6170

U.S. Environmental Protection Agency
Region VIII
999 18th Street, Suite 1300
Denver, CO 80202
(303) 293-1509

IV. Geographic Location

The facility is located in the Great Salt Lake Desert approximately 85 miles west of Salt Lake City, Utah, in Tooele County. Its location is within a 100 square mile zone set aside by the Tooele County Commission for hazardous waste activities. The site's approximate location is indicated on Exhibit No. 1.

The nearest residential neighbor is approximately 40 miles west of the facility in Wendover. The land within a 30-mile radius of the site is used as bombing ranges by the U.S. Air Force and for desert warfare training by the U.S. Army. Ninety-five percent (95%) of the land in the surrounding 30 miles is owned by the Bureau of Land Management. Magcorp owns an evaporation pond located approximately two miles south-southwest of the facility. The total acreage owned by USPCI, Inc. is 640 acres (one square mile); approximately 400 acres is utilized for active waste management by the Grassy and Grayback Mountain facilities. A site plan of the facility is included as Exhibit No. 2.

B. Climatology-Hydrogeology-Topography

Prevailing winds are generally from the northwest. The facility is located in an area with a net solar evaporation of approximately 42 inches. The normal annual precipitation is up to 6 inches, and the normal lake evaporation rate is 48 inches per year. Relative humidity averages nine percent (9%).

The facility is underlain by Recent, Pleistocene, and Quaternary sediments of the ancient Lake Bonneville bed. This silty clay deposit is estimated to be 500 feet thick and is underlain by an estimated 3,000 feet of valley fill. The shallow aquifer of the lake bed contains no potable water; the ground water contains total dissolved solids in a range of 55,000 mg/l to more than 100,000 mg/l. The soil underlying the site exhibits high sodium and chloride concentrations and has a natural permeability ranging from 1×10^{-3} cm/sec. to 1×10^{-8} cm/sec. The moderate permeability and a very low gradient result in a slow rate of west-northwest movement of the ground water. The seepage velocity averages less than 10 feet per year and ranges from a few inches per year to approximately 30 feet per year. The minimal flow is generally located beneath and in close proximity to the landfill cells.

There are no streams or rivers within 40 miles of the facility. The nearest naturally occurring body of water is the Great Salt Lake, 30 miles east of the facility. A ponding system has been constructed to the west of the facility; these ponds are used by Magcorp to concentrate the brines used in their solar mining of magnesium chloride.

Fresh water is hauled to the site from Grantsville, Utah, approximately 60 miles to the east.

The isolated location and the dry desert environment associated with the facility significantly enhance the effective containment and treatment of waste.

Ground water at the facility is routinely monitored by analyzing samples collected from both upgradient and downgradient wells. All monitoring wells have been approved by the regulatory agencies. The water quality analytical results include data from 1981 to the present and are available for review at the facility, at the Utah Department of Health, and at USPCI's corporate headquarters in Houston. No contamination of the ground water exists. Typical water quality parameters tested at each well include a large number of organics from the Appendix 9 (40 CFR) list, numerous metals, and various general chemistry parameters.

C. Security

The site's property is secured by a six-foot cyclone fence. A security guard is present 24 hours per day, seven days per week. Gates are used to allow access into and out of various sections of the facility. The gates are closed and locked when an area is not in use.

An expandable camera system consisting of three remotely-operated cameras on a fiber optics cable network was installed for traffic survey and night security. For additional security, motion sensors are located in the main office, facility laboratory, and records building. A fire protection system also secures the records building.

Warning signs are posted every 150 feet along the perimeter of the site, as well as where necessary throughout the facility.

V. TREATMENT AND DISPOSAL SERVICES

Total Number of Employees: 166

14 Administrative
42 Professionals/Engineers/Technicians
74 Operational/Production Personnel
14 Clerical
22 Laboratory Personnel

A. General Operations

1. Two Treatment and Disposal Facilities:

Grassy Mountain Facility

a) Disposal: Landfill cells for solid hazardous (RCRA) waste
Landfill cell for solid industrial waste

b) Storage: Containers
Tanks

c) Treatment: Neutralization
Stabilization
Oxidizer deactivation

Grayback Mountain Facility

a) Disposal: Landfill cells for solid PCB waste

b) Storage: Containers
Tanks

c) Treatment: PCB oil chemical destruction
Transformer drain and flush
Solidification

Hours of operation are from 8 a.m. to 10:30 p.m. Monday through Friday. After-hours acceptance can be arranged.

2. Transportation

As of December 31, 1990, USPCI's transportation division owned and operated 113 tractors with more than 195 vans, tankers and flatbed trailers for transportation of hazardous wastes and PCB solids and liquids. Terminals are located in Los Angeles, San Francisco, Houston, San Antonio, Twinsburg, Ohio; Kansas City, Missouri; Salt Lake City, Oklahoma City, Philadelphia and Atlanta.

All tractor-trailers are provided with required personal protective and emergency spill clean-up equipment. Drivers participate in driver safety training programs as well as annual hazardous materials and waste training programs.

Wastes are also accepted from common carriers.

To accommodate rail shipments, the facility's rail siding is located 10 miles south of the disposal site. Intermodal and bulk shipments are transported by truck to the facility for treatment and disposal.

3. Types of Waste

The Grassy Mountain facility is permitted to receive ignitable, corrosive, reactive and toxic wastes. Liquids, sludges, solids, lab packs in approved containers, and liquids in bulk tankers are acceptable.

The Grayback Mountain facility is permitted to receive PCBs and PCB-contaminated wastes including PCB liquids (<10,712 ppm), PCB-contaminated debris, transformer carcasses, and other PCB-contaminated materials.

All PCB wastes are received, stored, and handled separately from hazardous or non-PCB wastes until such time as PCB/RCRA-combined disposal is approved.

U. S. Pollution Control, Inc. is not permitted to receive radioactive, explosive or infectious biological agents for disposal.

4. Storage Facilities

With the exception of fiberglass acid storage tanks, all tanks are constructed of carbon-steel with manual shut-off systems. Secondary containment for each tank system is of concrete construction designed to handle precipitation from a 25-year, 24-hour storm, plus 110 percent of the volume of the largest tank.

Only compatible wastes are stored in the same tanks. No underground tanks are utilized at the facility.

Tank secondary containments and foundations are configured to allow effective visual inspection. Tanks are inspected each day for leaks. Ultrasonic tank wall thickness monitoring is performed periodically.

Drummed wastes are temporarily stored at the drum management facility and are segregated according to waste treatment and compatibility. While awaiting treatment, the containers are stored on concrete slabs with containment at 130 percent capacity.

B. Disposal Cells

The various cells are constructed and operated to exceed applicable state and federal regulations. All PCB, industrial, and hazardous waste cells are constructed above ground level.

1. PCB (TSCA) Disposal

Cell X and Cell Y were designed for landfill disposal of TSCA-regulated PCB solid wastes.

Cell X (Final Closure)

In early 1986, USPCI completed construction of a disposal cell for PCB-contaminated solids at the Grayback Mountain facility. This cell is constructed similarly to landfill Cell Two and meets the 1984 HSWA requirements in effect at that time.

In ascending order, Cell X consists of: a compacted clay liner with a permeability of less than 10^{-7} cm/sec., a secondary 60 mil HDPE liner, a secondary leachate detection/collection system, a primary 60 mil HDPE liner, a primary leachate detection/collection system, a non-woven geotextile fabric, and a two-foot protective soil layer. Both of the leachate collection and detection systems drain to sumps for the removal of any leachate. No free-flowing liquids are placed in this cell. Cell X contains approximately 200,000 cubic yards of waste. The final closure for this cell is underway.

Cell Y

The new cell for PCB landfill disposal was completed in January, 1990, and permitted in February, 1990. It was placed in service in May of that year. This cell measures 532 feet by 587 feet, with a designed capacity of 203,200 cubic yards.

Cell Y is constructed as follows in ascending order: a compacted clay liner with a permeability of less than 10^{-7} cm/sec., a secondary 60 mil HDPE liner, a secondary leachate detection/collection system, a primary 60 mil HDPE liner, a primary leachate detection/collection system, a non-woven geotextile fabric, and a two-feet thick protective soil layer. Both the leachate collection and detection systems drain into sumps for the removal of any leachate. This cell also has a stabilization tank which is used to solidify liquid PCB wastes. The PCB concentration of wastes must be known prior to disposal. Neither industrial lagoon sludges nor surface impoundment sludges or solids can be placed in Cell Y.

2. RCRA Waste Disposal

RCRA Cell Number One (Final Closure)

Cell Number One was completed in 1981 and met all RCRA interim status standards in existence at that time. The cell consists of a five-foot clay liner equipped with a gas collection and relief trench system. In the event leachate should ever penetrate the liner, these trenches would be used to recover the leachate. Rainwater and leachate were collected above the liner by the leachate collection system and then solidified. Cell One contains approximately 47,000 cubic yards of waste, has been filled, and is in the final closure process.

RCRA Cell Number Two (Final Closure)

Cell Number Two was completed in late 1985 and is constructed as follows (ascending order): a compacted clay liner with a permeability of less than 10^{-7} cm/sec., a secondary 60 mil HDPE liner with leachate detection/collection system, a primary 60 mil HDPE liner, a primary HDPE leachate collection system, a non-woven geotextile fabric, and a two-foot protective soil layer. Both the leachate collection and detection systems drain to sumps for the removal of any leachate. Cell Two contains 100,000 cubic yards of waste and is in the final closure stage.

RCRA Cell Three

Cell Three, used for the disposal of RCRA-regulated wastes containing no free liquids, was completed in early 1987. It was constructed as follows, in ascending order: a compacted clay liner with a permeability of less than 10^{-7} cm/sec., a secondary 60 mil HDPE liner, a secondary leachate detection/collection system, a primary 60 mil HDPE liner, a primary leachate detection/collection system, a non-woven geotextile fabric, a two-foot soil protective cover, a tertiary 80 mil HDPE liner, a non-woven geotextile fabric, and a two-foot soil protective cover.

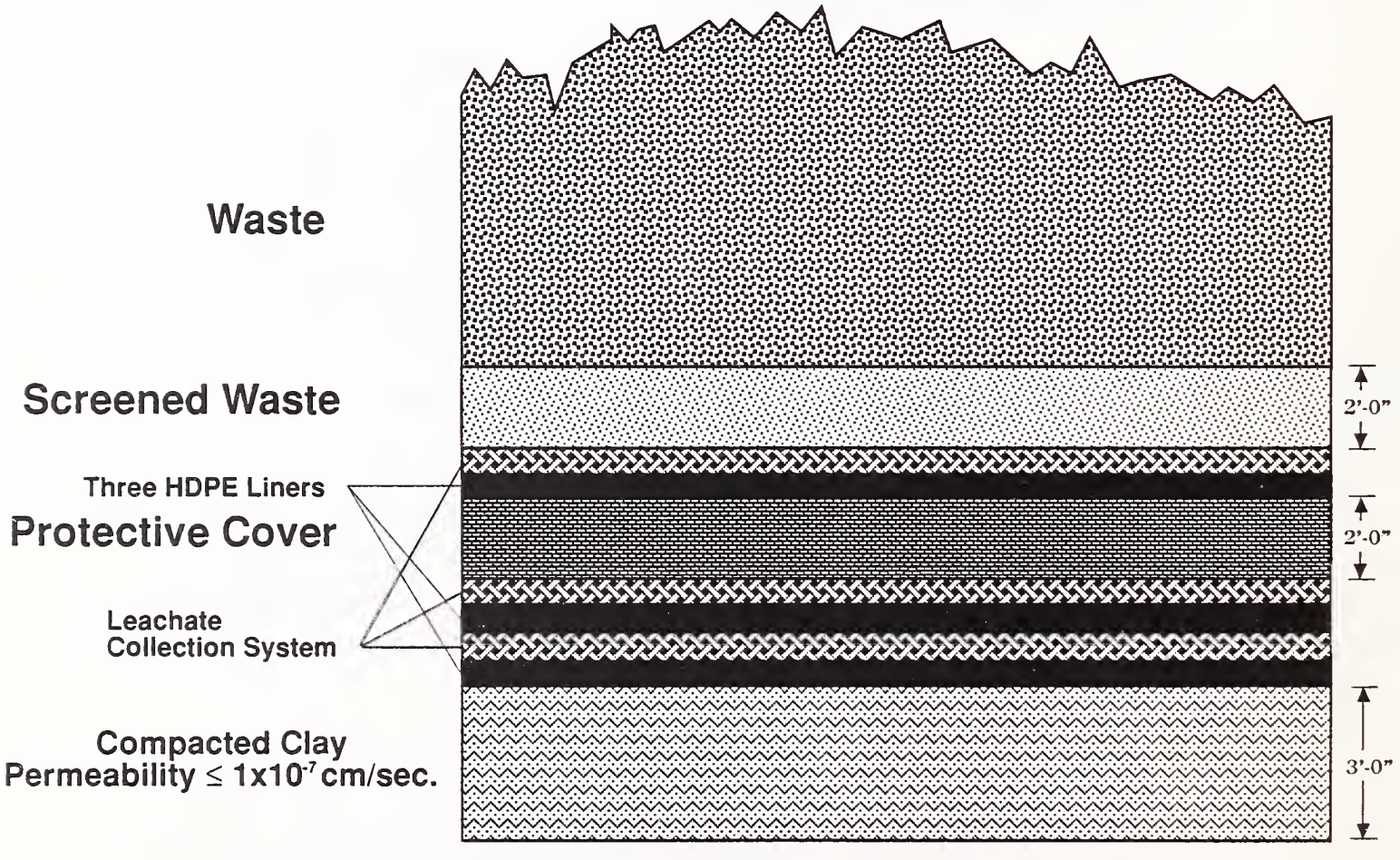
Notification of impending closure was filed in mid-December, 1990. When filled and closed, this cell will contain approximately 350,000 cubic yards of waste.

RCRA Cell Four

RCRA Cell Four was completed in May 1990, permitted December 20, 1990, and placed into service on December 27, 1990. This cell is rectangular in shape, measuring 470 feet by 1187 feet, with a capacity of 317,000 cubic yards.

In ascending order, this cell consists of a 3-foot compacted clay liner with a permeability of less than 10^{-7} cm/sec., a secondary 60 mil HDPE liner, a secondary leachate detection/collection system, a primary 60 mil HDPE liner, a primary leachate detection/collection system, a non-woven geotextile fabric, a two-foot soil protective cover, a tertiary 80 mil HDPE liner, a tertiary leachate detection/collection system, a non-woven geotextile fabric, and a two-foot protective soil layer. Both of the leachate collection and detection systems drain into sumps for the removal of any leachate.

USPCI TYPICAL LANDFILL CONSTRUCTION



3. Industrial (Non-hazardous) Waste Disposal

USPCI's industrial cells are designed and built to provide an increased level of security for waste that, although not classified as hazardous, should be disposed in a more secure manner than a sanitary (municipal) landfill. Wastes destined for USPCI's industrial cells are subject to the same evaluation procedure as hazardous wastes (i.e., pre-shipment samples, waste profiles, certificates, load arrival samples, and analytical data).

Industrial Cell One (Final Closure)

This non-hazardous waste landfill cell was completed in August of 1985 as follows (ascending order): a clay liner, a 60 mil HDPE liner, a primary leachate collection system, a non-woven geotextile fabric, and a three-foot sand layer. This cell is undergoing final closure.

Industrial Cell Two

This cell is constructed as follows, in ascending order: subgrade, a secondary 60 mil HDPE liner, a secondary leachate detection/collection system, a 60 mil HDPE primary liner, a primary leachate detection/collection system, a non-woven geotextile fabric, and a two-foot soil protective cover.

Industrial Waste Cell Two measures 306 feet by 1066 feet, with a capacity of 279,000 cubic yards. Its tentative closure date is the first quarter of 1992.

Industrial Cell Three

Industrial (non-RCRA) Cell Three is scheduled for completion in 1991 and has a projected life of approximately three years. This cell has the shape of an irregular trapezoid, approximately 1642 feet long, 679 feet wide at the base, and approximately 350 feet wide at the top. It has a capacity of 704,300 cubic yards.

This cell is constructed as follows, in ascending order: subgrade, a 60 mil HDPE secondary liner, a secondary leachate detection/collection system, a 60 mil HDPE primary liner, a primary leachate detection/collection system, a non-woven geotextile fabric, and a two-foot soil protective cover.

C. Treatment

Stabilization

Separate stabilization facilities are maintained at this location for PCB wastes, RCRA wastes, and industrial wastes. Various stabilization agents are mixed with the waste to eliminate free liquids, immobilize toxic constituents and/or detoxify toxic constituents. Analytical tests are performed on the stabilized wastes to assure that the appropriate reactions are completed. The stabilized wastes are then removed and placed in the designated landfill cell.

PCB Treatment

In 1985, USPCI acquired PPM, Inc. and installed a PCB oil treatment system which chemically destroys PCBs. The system produces a reusable, non-hazardous oil and an inorganic salt. In early 1987, a transformer drain and flush facility was completed.

D. Laboratory Services

The facility's laboratory operates from 8 a.m. to 12 midnight Monday through Friday. The Grassy Mountain on-site laboratory performs sampling and analysis for:

- Pre-qualification of customer's waste
- Subsequent fingerprinting of waste shipments to determine conformity
- Additional analysis to determine compatibility with stored wastes

A pre-qualification analysis usually is completed within two weeks of receipt of a sample, profile sheet, and other necessary paperwork. Up to two additional weeks may be needed for restricted wastes which require development and verification of a treatment recipe.

All records are maintained indefinitely and are confidential to the extent permitted by law.

1) Total Number of Employees: 25

1 Laboratory Manager
1 Laboratory Analysis Coordinator
11 Degreed Chemists
5 Chemical Technicians
1 Quality Assurance Coordinator
2 Laboratory Clerks
4 Laboratory Technicians

2) Equipment:

3 gas chromatographs
Flash point tester
2 TOX analyzers
6 TCLP extractor banks
Inductively-coupled plasma spectrometer
2 GC/MS
Leco bomb calorimeter
Auto analyzer
pH meters
X-ray fluorescence spectrometer

3) Analytical Tests Performed:

BTU	Metals analysis	Specific gravity
Corrosivity	PCB	Sulfide
Cyanide	Pesticides	Total organic halogens
Fixation recipes	Reactivity	Volatile organics
Ignitability	Semi-volatile organics	X-ray analysis

VI. WASTE ANALYSIS AND TRACKING SYSTEM

The Waste Analysis Plan describes procedures used to obtain the chemical/physical data necessary to determine:

- Acceptance of waste material by Grassy or Grayback Mountain
- Methods of handling
- Treatment methods
- Disposal

A. Initial Waste Evaluation

1. Along with the shipment of a 2-quart representative sample from the customer to the Grassy Mountain laboratory, the following will also be required:

   a) USPCI's waste profile sheet (Exhibit No. 3)
   b) Material safety data sheet pertaining to the primary constituents of the waste, if applicable
   c) Any other lab analysis, technical data, and/or additional information regarding the waste composition
   d) Notifications or certifications regarding land-banned wastes

   From this information, a decision will be made by the Grassy and Grayback Mountain technical staff as to what additional analyses may be required.

2. The decision for acceptance/denial, special stipulations for acceptance, etc. will be conveyed to the customer by the sales department subsequent to the evaluation. A waste approval number is issued at this time. Example: GM90-8775 or GB89-8775.

3. The sales department will respond to the customer in the form of a written quotation or a letter of denial, depending on the evaluation results.

B. Pre-Shipment Procedures

The customer contacts USPCI's Customer Service Center at 1-800-877-2416 to request pickup of approved wastes. The customer service representative will require the following information:

- Current waste acceptance numbers for all waste streams to be picked up
- Type of container and/or equipment required for loading
- Date and time of pickup requested
- Waste description and quantity
- EPA waste codes
- DOT description and numbers

Unscheduled shipments may result in unloading delays or rejection notice delays and demurrage charges.

C. Post-Shipment Procedures

Upon entering the facility, the transporter's order number is verified. The transporter is then directed by facility security personnel to the Grassy/Grayback Mountain receiving department, where the driver weighs in and presents the manifest and attached shipping papers for technical review. Procedures are as follows:

1. The tractor-trailer is weighed on the vehicle scales.

2. Bulk shipments are sampled for conformity.

3. Containers are off-loaded and sampled according to permit conditions. Lab packs are inspected for compatibility and conformance to USPCI's lab pack guidelines.

4. Provided the shipment conforms to the paperwork and the waste conforms to the initial waste profile, the manifest will be signed. The truck is routed to the appropriate disposal or treatment area. The manifest will be distributed to the customer and state agencies.

5. If the paperwork and/or waste is non-conforming, the facility customer service representative will contact the sales representative and/or the customer in an attempt to resolve the problem. An additional service fee may be charged to resolve paperwork or non-conforming waste problems.

6. The load is returned if a mutually satisfactory solution cannot be reached.

VII. TRAINING-INSPECTION-SAFETY-CONTINGENCY PLAN

A. Employee Training Program

The Grassy/Grayback Mountain facility training program enables employees to understand the processes and materials with which they are working and the safety and health hazards associated with those processes and materials. Both RCRA (Resource Conservation and Recovery Act) and OSHA (Occupational Safety and Health Administration) 1910.120 training requirements are met by facility personnel successfully completing classroom training, on-the-job training, seminars, and/or short courses. The training takes place both on and off-site.

All new employees receive 24 hours of classroom training including: company overview, preparedness and prevention, contingency plan, regulatory review, chemistry of hazardous materials, DOT placarding and hazardous materials recognition, principles of safety, confined space entry, instrumentation, waste identification and segregation, industrial hygiene, toxicology, respiratory protection, personal protective equipment, decontamination, and emergency response. In addition, specific training is given to each employee with regard to his/her job duties. Training is maintained on an annual basis, with a minimum of eight hours per person per year.

All employees learn appropriate procedures for emergency response. In addition, Spill Response, Fire Response, and Medical First Responder groups with approximately 12 members each initially receive at least 40 hours of specialized training. These employees will respond to all emergencies and hazardous materials releases as directed by the site emergency response coordinator designated by the facility contingency plan.

Each employee takes several written tests throughout the training process. The tests, along with attendance sheets, job descriptions, training requirements, training history, personal protective equipment and on-the-job certificates, are kept in employees' files and maintained by the facility training manager. A qualified training manager insures all training programs are properly administered and recorded at the Grassy/Grayback Mountain facility.

B. Safety

The Grassy/Grayback Mountain facility conducts a complete program in health surveillance which includes:

- Pre-employment physicals
- Employment physicals upon hiring (Protocol I)
- Annual physicals (Protocol II)
- Exit physicals upon termination

Protocol I

The health surveillance program includes:

- Medical health history and general physical exam
- Stress exercises, EKG
- Pulmonary function tests
- Chest, lumbar, and spinal X-rays
- Audiometry
- Vision screening
- Hematology survey
- Urinalysis
- Blood screen and blood chemistry

Protocol II

Includes all in Protocol I with the exception of X-rays, plus:

- Heavy metals screen
- Chemistry profile

All records are maintained in the same manner as the training records.

C. Safety Program

A major element of USPCI's hazard reduction program is personnel safety and personal safety procedures. Training with regard to safety is conducted as previously outlined in

Section A. Safety meetings with and by the various operations groups are conducted at least monthly throughout the facility. A Site Safety and Health committee meets bi-weekly. Medical, Spill and Fire Response groups meet at least monthly to conduct training and to discuss safety issues pertinent to their particular disciplines.

Safety awareness and safety incentive programs are also an ongoing effort at Grassy/ Grayback Mountain. A qualified Health and Safety officer helps coordinate safety activities at the site. The Health and Safety officer also performs safety training and conducts site audits as necessary. A written site-specific program is in effect at the facility. Both corporate and site-specific health and safety policies are part of the overall safety program.

Personal protective equipment distributed throughout the facility includes, but is not restricted to:

- Safety hats, goggles and/or safety glasses
- Hearing protection (ear plugs and muffs)
- Protective footwear (leather safety shoes and chemical-resistant rubber safety boots)
- Protective outerwear (Tyvek, Saranex, Chemrel)
- Appropriate respiratory protection (includes air-purifying respirators, self-contained breathing apparatus and air-supplied respirators)

Emergency equipment includes:

- Portable fire extinguishers at locations throughout the site
- First aid supplies
- Emergency oxygen
- Spill clean-up and containment material
- Heavy equipment
- Sprinkler protection for the drum dock, fire hydrants for the site (five)
- Spill response trailer

The Grassy/Grayback Mountain facility employs an emergency diesel-driven generator which can supply power for emergency lights and critical pumping equipment in the event of a power outage.

D. Inspections

Inspections are conducted daily and recorded on appropriate checklists. Any exceptions to standard conditions are recorded and repaired on a schedule which ensures protection of human health and the environment.

The facility inspection plan is meant to address the types of problems which are inherent in the materials the Grassy/Grayback Mountain facility handles and the equipment and structures used in the hazardous waste disposal process. Equipment and structures are generally classified as follows:

- Safety equipment
- Emergency equipment

- Fire protection equipment
- Security devices
- Heavy equipment
- Treatment facilities
- Housekeeping
- Leachate detection
- Storage tanks

Frequency of inspection is based on expected deterioration rates and the realistic probabilities that any equipment malfunction or failure could impact human health or the environment. Areas subject to spills, i.e., loading/off-loading facilities, are inspected daily. Containers are inspected when off-loaded and daily while in storage.

E. Contingency Plan

The Grassy/Grayback Mountain contingency plan has been developed in accordance with 40 CFR 264, Subpart D, and describes the actions facility personnel will take in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or constituents to the environment.

The plan identifies five emergency coordinators and describes their responsibilities with respect to initiating and implementing the plan. The emergency coordinators designated in the plan are authorized to commit the resources necessary to ensure successful, expedient implementation.

All necessary public facilities/agencies have been identified and are an important part of the Grassy/Grayback Mountain contingency plan. They are:

- U.S. EPA Region VIII
- Utah State Department of Health
- North Tooele County Fire District
- Tooele County Sheriff's Office
- University of Utah Medical Center
- Tooele County Hospital
- Wendover Ambulance
- Utah State Highway Patrol

Emergency response drills are conducted periodically at random and include drills for fires, explosions, spills, etc.

VIII. INSURANCE/FINANCIAL

A. Insurance

The Grassy/Grayback Mountain insurance coverage fully complies with that required by 40 CFR Part 265.147, Subpart H. A certificate of insurance is attached for review. (Exhibit No. 4)

B. Financial

A trust fund has been established with Zions First National Bank to provide all closure and post-closure costs. The calculation of this annual payment is consistent with 40 CFR 265.143 and CFR 265.145. The February 1991 trust payment was calculated as follows:

Calculations for 1991 Trust Fund Payment

(All figures rounded to the nearest whole dollar)

Current value of fund as of December 31, 1990 (CV): (Source: Statement of Zions National Bank)	$1,644,979
Inflation-adjusted combined closure/post-closure cost estimates as of February 1991:	$4,296,901

Years remaining in initial permit period (Y): 7

Next payment calculation: (CE - CV/Y)$4,296,901 - $1,644,979 ÷ 7 = $378,846

Payment due: $378,846

The Grassy/Grayback Mountain closure and post-closure plans fully comply with 40 CFR 265, Subpart H, as detailed in the Part B permit. Closure and post-closure plans are available at the site for review.

UNITED STATES POLLUTION CONTROL, INC.
GRASSY MOUNTAIN FACILITY &
GRAYBACK MOUNTAIN FACILITY

FACILITY LOCATION MAP

FACILITY LOCATION
KNOLLS, UTAH

REGIONAL HEADQUARTERS
8960 N. HIGHWAY 40
LAKEPOINT, UTAH 84074

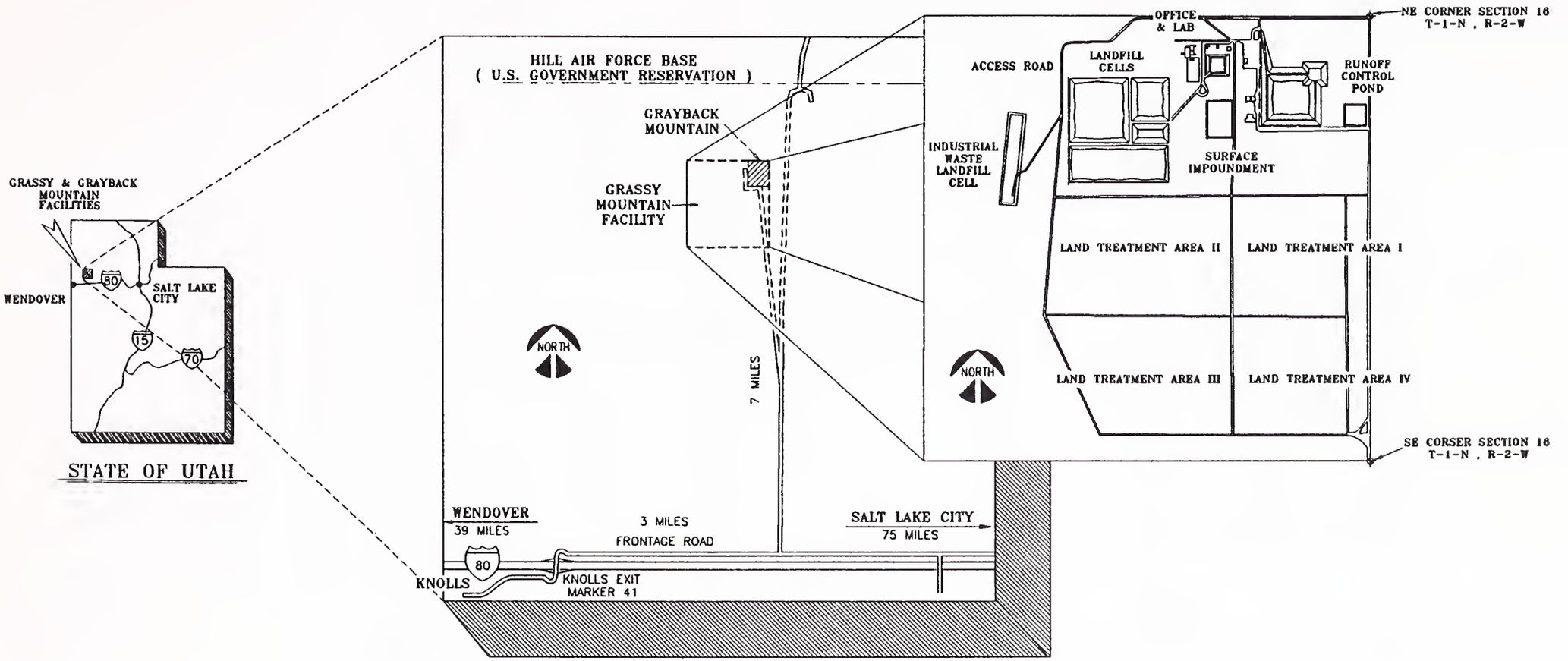
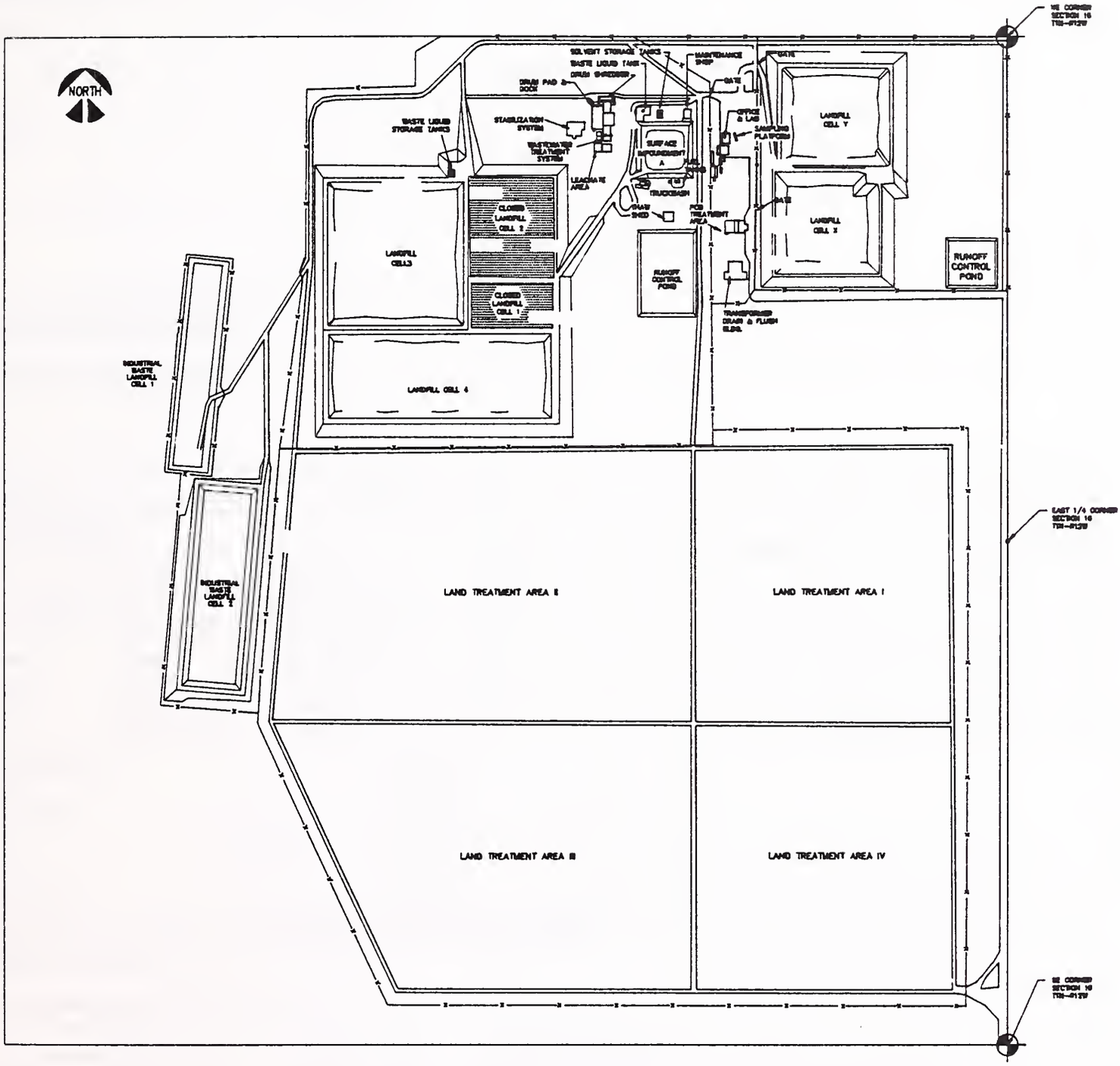


EXHIBIT NO. 1

EXHIBIT NO. 2



GRASSY/GRAYBACK MOUNTAIN
FACILITY SITE PLAN

EXHIBIT NO. 3

USPCI
A Subsidiary of Union Pacific Corporation

Waste Profile Sheet

Purchase Order Number	Contract Number	USPCI Sales Representative

I. Customer Information

Customer Name:	Technical Contact
Service For:	Phone / FAX
Mailing Address:	General Contact
	Phone / FAX
Bill To:	Broker Contact
	Phone / FAX
	EPA ID Number

II. Waste Generation Information

Waste Name

Description of process producing the waste

Quantity of waste

_____ Tons _____ Drums _____ Gallons _____ lbs _____ Cu.Yd. ☐ Per Year ☐ One Time Only

III. Waste Properties

Physical State

☐ Solid contains free liquid? ☐ yes ☐ no

☐ Liquid pH range: ☐ ≤2 ☐ 2-5 ☐ 5-8 ☐ 8-12 ☐ ≥12.5

Physical Parameters

☐ explosive ☐ fuming acids ☐ absorbents
☐ strong odor ☐ reactive Bulk Density= _____
☐ infectious ☐ asbestos Normality= _____
☐ PCB ☐ oxidizers Specific
☐ radioactive Gravity= _____

Waste Composition	Range in %
Total must equal at least 100%	

Complete for Thermal Destruction

Heat Value (BTU/lb)	_____ to _____	Total Bromine	_____ to _____ %
Water Content (%)	_____ to _____	Total Chlorine	_____ to _____ %
Ash (%)	_____ to _____	Total Fluorine	_____ to _____ %
Vapor Pressure (mmHG)	_____ @ STP	Total Iodine	_____ to _____ %
Viscosity (cps)	_____ @ _____ °F	Total Sulfur	_____ to _____ %

IV. EPA Waste Codes and Land Disposal Restrictions Standards:

Applicable EPA listed waste codes (F,K,U, or P)

Land Disposal Restriction standards: (check one)

☐ does not meet any applicable standards ☐ thallium > 130 mg/l ☐ meets standards for _____ and
☐ treated to meet all applicable standards ☐ nickel > 134 mg/l exceeds standards for _____.
☐ meets all standards without treatment ☐ HOC > 1000 mg/l ☐ unknown by customer ☐ no treatment standards apply

Non Regulated Waste:

☐ Non Hazardous under RCRA or State Regulations ☐ Conditionally Exempt Small Quantity Generator ☐ 100-1000 kg/mo generator

V. D-Code Characteristic Waste

			Actual Range				Actual Range
☐	**D001** Ignitable (f.p.<140° F)			☐	**D013** Lindane	≥0.4 mg/l	
	☐ High TOC (>10%) NWW			☐	**D014** Methoxychlor	≥10.0 mg/l	
	☐ Low TOC (<10%) NWW			☐	**D015** Toxaphene	≥0.5 mg/l	
	☐ Ignitable liquids			☐	**D016** 2,4-D	≥10.0 mg/l	
	☐ Ignitable reactives			☐	**D017** 2,4,5-TP Silvex	≥1.0mg/l	
	☐ Oxidizers			☐	**D018** Benzene	≥0.5 mg/l	
☐	**D002** Corrosive (pH≤2≥12.5			☐	**D019** Carbon tetrachloride	≥0.5 mg/l	
	☐ Acid liquids			☐	**D020** Chlordane	≥0.03 mg/l	
	☐ Alkaline liquids			☐	**D021** Chlorobenzene	≥100.0 mg/l	
	☐ Other corrosive liquids			☐	**D022** Chloroform	≥6.0 mg/l	
☐	**D003** Reactive			☐	**D023** o-Cresol	≥ 200.0 mg/l	
	☐ Reactive sulfides			☐	**D024** m-Cresol	≥ 200.0 mg/l	
	☐ Explosives			☐	**D025** p-Cresol	≥ 200.0 mg/l	
	☐ Water reactives			☐	**D026** Cresol	≥ 200.0 mg/l	
	☐ Other reactives			☐	**D027** 1,4-Dichlorobenzene	≥7.5 mg/l	
☐	**D004** Arsenic	≥5.0 mg/l		☐	**D028** 1,2-Dichloroethane	≥0.5 mg/l	
☐	**D005** Barium	≥100.0 mg/l		☐	**D029** 1,1-Dichloroethylene	≥0.7 mg/l	
☐	**D006** Cadmium	≥1.0 mg/l		☐	**D030** 2,4-Dinitrotoluene	≥0.13 mg/l	
☐	**D007** Chromium	≥5.0 mg/l		☐	**D031** Heptachlor (and its epoxide)	≥0.008 mg/l	
☐	**D008** Lead	≥5.0 mg/l		☐	**D032** Hexachlorobenzene	≥0.13 mg/l	
	☐ Lead acid batteries			☐	**D033** Hexachloro-1,3-butadiene	≥ 0.5 mg/l	
☐	**D009** Mercury	≥0.2 mg/l		☐	**D034** Hexachloroethane	≥3.0 mg/l	
	☐ High mercury (>260 mg/kg)			☐	**D035** Methyl ethyl ketone	≥200.0 mg/l	
	☐ (organics)			☐	**D036** Nitrobenzene	≥2.0 mg/l	
	☐ High mercury (>260 mg/kg)			☐	**D037** Pentachlorophenol	≥100.0 mg/l	
	☐ (inorganics)			☐	**D038** Pyridine	≥5.0 mg/l	
	☐ Incin. residues			☐	**D039** Tetrachloroethylene	≥0.7 mg/l	
	☐ Low mercury (<260 mg/kg)			☐	**D040** Trichloroethylene	≥0.5 mg/l	
☐	**D010** Selenium	≥1.0 mg/l		☐	**D041** 2,4,5-Trichlorophenol	≥ 400.0 mg/l	
☐	**D011** Silver	≥5.0 mg/l		☐	**D042** 2,4,6-Trichlorophenol	≥2.0 mg/l	
☐	**D012** Endrin	≥0.02 mg/l		☐	**D043** Vinyl chloride	≥0.02 mg/l	

VI. Shipping Information

DOT Shipping Name (per 49 CFR 172.101)

Reportable Quantity

DOT hazard class | UN/NA number

Method of shipment

☐ bulk solids ☐ bulk liquids ☐ 55-gallon drum ☐ lab pack ☐ other (specify) _____

I certify that the information presented on this form is accurate, the waste has been correctly characterized according to 40 CFR 262.11, a representative sample (or lab pack inventory) of this waste stream has been provided to USPCI, and that I am authorized by the above listed company or Agency to provide this information

Signature | Printed Name | Date

REVOCT1990

EXHIBIT NO. 4

ACORD. CERTIFICATE OF INSURANCE

ISSUE DATE (MM/DD/YY)
1/1/91

PRODUCER

Johnson & Higgins
125 Broad Street
New York, NY 10004

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED

USPCI, Inc.
U.S. Pollution Control, Inc.
d/b/a USPCI
515 West Greens Road
Houston, TX 77067

COMPANIES AFFORDING COVERAGE

COMPANY LETTER A — National Union Fire Insurance Company
COMPANY LETTER B — Landmark Insurance Company
COMPANY LETTER C
COMPANY LETTER D
COMPANY LETTER E

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS		
	GENERAL LIABILITY				GENERAL AGGREGATE	$	3,000,000
A	X COMMERCIAL GENERAL LIABILITY	RMGL2498904 (Simp)	1/1/91	1/1/92	PRODUCTS-COMP/OP AGG.	$	3,000,000
	CLAIMS MADE X OCCUR.	RMGL2498905 (Non-Simp)			PERSONAL & ADV. INJURY	$	3,000,000
	OWNER'S & CONTRACTOR'S PROT.	RMGL2498906 (TX)			EACH OCCURRENCE	$	3,000,000
					FIRE DAMAGE (Any one fire)	$	
					MED. EXPENSE (Any one person)	$	
	AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT	$	
A	X ANY AUTO	RMBA1459004 (Simp)	1/1/91	1/1/92			4,000,000
	X ALL OWNED AUTOS	RMBA1459005 (Non-Simp)			BODILY INJURY (Per person)	$	
	X SCHEDULED AUTOS	RMBA1459006 (TX)					
	X HIRED AUTOS				BODILY INJURY (Per accident)	$	
	NON-OWNED AUTOS						
	GARAGE LIABILITY				PROPERTY DAMAGE	$	
	EXCESS LIABILITY				EACH OCCURRENCE	$	2,000,000
A	X UMBRELLA FORM	BE1944761	1/1/91	1/1/92	AGGREGATE	$	2,000,000
	OTHER THAN UMBRELLA FORM						
		RMWC1730559 (AOS)			STATUTORY LIMITS		
A	WORKER'S COMPENSATION AND	RMWC1730561 (TX)	1/1/91	1/1/92	EACH ACCIDENT	$	2,000,000
		RMWC1730562 (CA)			DISEASE—POLICY LIMIT	$	2,000,000
B	EMPLOYERS' LIABILITY	RMWC1730571 (LA)			DISEASE—EACH EMPLOYEE	$	2,000,000
	OTHER						
A	Pollution Legal Liab. *	PRM7063130	1/1/91	1/1/92	Each Loss		5,000,000
					Total All Losses		10,000,000

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

*Locations:

Grassy Mt., UT	Tulsa, OK	Kansas City, MO	Tucker, GA
Grayback Mt., UT	Lone Mt., OK	San Antonio, TX	Wichita, KS
San Jose, CA	Vernon, CA	Philadelphia, PA	Twinsburg, OH

CERTIFICATE HOLDER

COPY

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

Robert A. Kench

EXHIBIT "A"

Insured: USPCI, Inc.
One Commerce Green, Suite 500
515 West Greens Road
Houston, Texas 77067

** Except Compulsory States of Ohio, West Virginia, Washington, North Dakota and Wyoming.

Can be named an Additional Insured (applies to General Liability, Automobile Liability and Excess Liability only).

Can be given 10 or 30 days notice of cancellation.